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FROM CORPUS-ASSISTED TO CORPUS-DRIVEN

NSM EXPLICATIONS:

THE CASE OF FINNISH *VIHA* (ANGER, HATE)

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Abstract: NSM researchers have not used corpus data very systematically thus far. One could talk about corpus-assisted rather than corpus-based or corpus-driven research. This article suggests a way to not only base research on corpus data, but also to let it guide us in defining words in terms of NSM. It presents a new method, which we have developed. Our data come from the *Suomi24 Sentences Corpus* and concerns the Finnish emotion words *viha* ('anger, hate'), *vihata* ('to hate') and *vihainen* ('angry').

Key words: anger, emotion, the Finnish language, Natural Semantic Metalanguage, semantics.

1. Introduction

The introduction begins with discussing previous research on anger. It then specifies the aims of the current research and introduces our data and method.

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1.1 Previous research on anger

Anger has been a popular topic in emotion studies ever since Lakoff and Kövecses (1987) posited a central metaphor for it in American English: ANGER IS THE HEAT OF A FLUID IN A CONTAINER. Since then, many studies have been written on metaphors of anger in other languages (cf., Yu 1995). However, the conceptualization of anger-like emotions across different languages has also been studied in other theoretical frameworks, such as the NSM framework (cf., Durst 2001), where NSM stands for Natural Semantic Metalanguage. This is a mini-language consisting of about 65 words, developed by Wierzbicka and her collaborators in order to define all remaining words of any language. These 65 words are called semantic primes (see Wierzbicka 1996; the NSM homepage¹).

Previous research by Tuovila (2005: 71) has established that *viha* 'hatred, anger' is cognitively the most salient emotion for speakers of Finnish. However, while the Finnish *viha* differs from the English *anger*, for example, there is little research to suggest what the exact difference is. The aim of this paper is to suggest an inter-subjective, corpus-based definition of the Finnish word *viha* and its derivatives in terms of NSM. However, suggesting definitions is not our only aim. Our primary aim is to develop the semantic methodology.

1.2 Aims of research

The main purpose of the project was to investigate two methodological questions. One was how the NSM method could be combined with corpus linguistics. The other was what happens if three linguists conduct an analysis together. The latter question seems particularly relevant given that analyses are rather rarely replicated by peer semanticists, although inter-rater agreement is sometimes measured (Zeschel 2010).

We chose the Finnish root word *viha* 'hatred, anger' as our topic for several reasons. Firstly, this emotion is potentially of interest to people from many different fields, including those doing research on or otherwise working with issues related to hate

speech (in Finnish, *vihapuhe*). People in this field seem more likely to define *hate speech* than *hate*, although there is an important connection between the two words or concepts (Vitikka 2014: 2-3, 9-15; Weber 2009: 3-5). Secondly, anger has been the focus of many linguistic semantic studies (Durst 2001; Lakoff & Kövecses 1987; Maalej 2004; Ogarkova et al. 2016; Yu 1995). Thirdly, *viha* seems to be a Finnish cultural keyword (Tuovila 2005: 71). Moreover, it seems to differ from anger words in other languages because the same root, *viha**, can be used to express emotions ranging from anger to hate (the asterisk indicates that *viha** is the root, the stem, so to say, of many other words). However, it is difficult to pin down exactly what the difference is between, for example, *viha* in Finnish and *hate* in English.

1.3 Introduction to relevant methodological issues

It is particularly useful to combine the NSM method with the corpus method in the case of *viha* because emotions are a favourite topic among NSM researchers (Harkins & Wierzbicka 2001; Wierzbicka 1999). The strength of NSM is its semantic differentiating power. It allows us to differentiate, for example, between such English words as *pleased*, *contented*, and *delighted* (Wierzbicka 1999: 54-57). Furthermore, NSM research on words for emotions suggests that the emotion lexicon of each language is culturally bound rather than universal, beginning with such basic words as *feeling* (Wierzbicka 1995).

However, there is a call for anchoring NSM research in clearly specified, authentic data in a way that would allow the research to be replicated. So far, most of the work on NSM has not been explicitly based on systematically collected corpus data. For example, Wierzbicka (1999: 49-121) does not document where she obtained the data to define English emotion words, including the adjective *angry*.

Increasingly, NSM researchers seem to mention that they have used corpus data while writing definitions for words, but they seldom explain in what way this was done. It seems that corpora have mainly been used to find examples to illustrate definitions that

have already been created instead of the corpora explaining the definitions to begin with. The former kind of corpus use could be called corpus-assisted research, while the latter could be called corpus-driven research.

The term *corpus-driven* was introduced by Tognini-Bonelli (2001: 85) who described the corpus-driven approach as one in which "[t]he corpus ... is seen as more than a repository of examples to back pre-existing theories", the result being that "[t]he theoretical statements are fully consistent with, and reflect directly, the evidence provided by the corpus". Corpus-driven research is usually associated with large sets of data or at least refined statistical methods. In this article, we will mainly use it to refer to a "nitty-gritty manual analysis of semantic features of a small corpus sample", which does not yet represent but could be developed into multivariate research (Glynn 2010: 17).

A third term, *corpus-based*, has also been used. According to Tognini-Bonelli (2001: 65), it has sometimes been used rather vaguely. She recommends that it be used "to refer to a methodology that avails itself of the corpus mainly to expound, test or exemplify theories or descriptions that were formulated before large corpora became available to inform language study" (ibid., 65).

1.4 Introduction to our data and method

We wanted to approach the meaning of *viha* in an innovative way. We therefore used clearly specified corpus data to define our term, but we also aimed at an inter-subjective definition. The idea was to use the judgements of three native speakers rather than that of a single researcher to arrive at a definition of *viha*. We focused on three words beginning with the stem *viha**: *viha* (the noun), *vihata* (a verb), and *vihainen* (an adjective).

Our data came from a corpus called *Suomi24*, which "contains all the discussion forums of the Suomi24 online social networking website from January, 1 2001 to September

24, 2016 available in the Suomi24 API" (the Suomi 24 Sentences Corpus webpage²). This means that our relatively small-scale semantic analysis can be compared to research on big data in order to highlight the differences between the findings in differently sized data sets. A project called *Citizen Mindscapes* is working on the same data right now but in a different way, considering it as a whole, as big data. It includes a subproject called "Kansakunnan tunneaallot" ("Waves of citizens' emotions") (Lagus et al. 2016).

There are at least two ways of using corpora to create NSM-based definitions of words. One is to read the corpus data on a given word and then formulate an NSM-based definition of it (Fabiszak 2000). The other is to write NSM-based definitions of the different senses of a word such as *viha* and then analyze how often these senses occur in a corpus. We decided to combine these two approaches by starting from a set of fixed definitions and adding to them on the basis of our analysis. However, eventually we developed a completely new method of creating NSM-based definitions. In brief, we began to do corpus-based research on *viha*, but ended up doing corpus-driven research. In other words, our data eventually began to inform us as to the best way to analyze the material.

2. Our inter-subjective method: The process

Here, we will explain what we planned to do and how the plan changed in the middle of the process. This research was supposed to be conducted in two stages to begin with, but the second stage was not realized in the way it was originally planned.

2.1 The starting point

One of us had been working with Cliff Goddard on an NSM-based definition of the Finnish word *viha* even before we began to collaborate on this topic. The other two researchers had worked on the difference between the psychological representations of *viha* in Finnish and Estonian. The Finnish and Estonian words for *viha* share the same root, but do not use it in exactly the same way (Realo et al. 2013). Two of us (Siirainen

2001; Tissari 2003) had also worked on words for emotions in Finnish and in English respectively. In addition, another two of us had worked on translating the Natural Semantic Metalanguage from English into Finnish (Vanhatalo et al. 2014). This seemed like a good team to continue working on *viha*.

Etymologically, the word *viha* entered the Finnish language from Proto Aryan **viša* meaning 'poison, bile', and until very recently its meaning has actually been 'bitter' or 'acrid' (Etymological Dictionary of Finnish 2000, s.v. *viha*; here the asterisk means that this is an assumed proto-form that does not exist in any natural language). Many present-day Finnish words begin with the root *viha**. There are a number of compounds, like the previously mentioned *vihapuhe* 'hate speech', and derivatives such as *vihaaja* 'hater'. After discussing the representation of such words in several dictionaries, we chose the three basic words on which we focussed: *viha* (noun), *vihata* (verb), and *vihainen* (adjective).

The main reason for using corpus data in our research was that we wanted to base our definitions on authentic modern Finnish. There were many corpora to choose from. We chose the *Suomi 24 Sentences Corpus* as our data set because the material was recent and because we assumed that the language of internet discussion forums would be close to spoken Finnish. That would allow us to investigate people's everyday language rather than professional vocabularies, such as legal or newspaper language. The caveat of course remains that we only deal with one type of everyday discourse. The contexts which we gleaned from the corpus by creating Excel tables with random examples of words were rather short, usually only one-sentence long.³

As mentioned above, the plan was to write NSM-based definitions of the different senses of *viha* and then analyze how often these meanings occur in the corpus. The data for this purpose consisted of 900 random instances, 300 occurrences of each word. The idea was to measure whether three linguists would agree on which instances would correspond to each definition. We started from a relatively short list of seven

definitions, assuming that we could use the same three definitions for the verb and noun. The list included three definitions for the verb and noun, which we assumed would mean approximately the same thing, one additional definition for the verb, and three for the adjective. These definitions can be found below in section "3.1. The first round". Each of us was also allowed to create new definitions in the course of analyzing the data.

It should perhaps be mentioned that we did not use the NSM-based definition of the Finnish *viha* presented by Tuovila (2005: 100). The reason is that it does not particularly differ from Wierzbicka's definitions of the English word *anger*. It can be compared, for example, with Wierzbicka's (1992: 569) definition of *anger*:

anger
X feels something
sometimes a person thinks something like this:
this person did something bad
I don't want this
because of this, I want to do something
I would want to do something bad to this person
because of this, this person feels something bad
X feels like this

In effect, what Tuovila (2005: 100) did was to eliminate the idea that anger needs to be directed towards another person. Therefore, her definition simply suggests that something bad happened and that X did not want this. Even in Tuovila's (2005: 100) definition, X wants to do something. Moreover, she added the idea that *viha* lasts for a long time, which could be a characteristic of the Finnish word, in particular as compared to the English *anger*.

2.2 The sequel

The original plan was for the researchers to discuss the analysis of the 900 examples together in order to arrive at final definitions for each word and then re-analyze the data to test whether the rate of agreement would be higher in the second round. However, analyzing and discussing the data proved to be more challenging than anticipated. The analysis took longer than we expected. After the analysis had been conducted, it was possible for us to discuss the definitions each of us tended to favour and what kinds of details were missing from the initial definitions, but it was impossible to discuss every occurrence of each word. At the same time, it was clear that we could discuss single sentences at length and that each of us would notice different things. We ended up discussing the kinds of features that should be added to the definitions and opting for a new method of analysis.

In the new plan, the starting point was a list of features in the style of "someone X feels very bad" and "someone X does something", which each of us then tried to apply to our first one hundred random examples of the one word allotted to her. The idea was to see how often each feature would occur and let that inform our definitions of the noun, verb, and adjective. In other words, we dismissed the idea that each of us should continue to analyze the very same data, although we began the second round by analyzing together ten examples of each word to ensure that we understood the features in the same way. In the process of analysis we nevertheless realized that it was more difficult to decide whether some features appeared than others; we also found that we did not fully agree on what was easy and what was difficult to decide.

In addition, it should be mentioned that our analysis was possibly influenced by the fact that the same person who collected the data for a particular word also analyzed the word in the second round. The decision was a good one in that the person was the most familiar with the data, yet the outcome of the analysis could have been slightly different if each of us had analyzed data with which we were less familiar.

Finally, we discussed the outcome of the analysis and also showed it to a fourth person who commented on how it could be developed using statistics. However, instead of proceeding to a third analysis, we stopped there to define what the noun, verb, and adjective mean in present-day, online Finnish and to consider how the method could be developed. Note, however, that this article already suggests a significant development in corpus-assisted research and helps us to make NSM analyses more reliable and replicable than before.

3. Findings

This section discusses the first and second stages of our research separately. They will then be summarized and compared.

3.1 The first round

This section will begin by introducing our seven preliminary definitions for the noun, verb, and adjective forms of *viha*, and will continue by discussing what happened when each of us decided which occurrence of each word corresponded with which definition and also when a further definition was needed. I will include an example from our data if at least two of us agreed on which category it fits. As regards two definitions of the adjective, we did not in fact reach an agreement between any two of us about any instance of a particular word. One of us found the adjective so difficult to analyze that she only finished analyzing seven examples. Another created seven new definitions of her own for the adjective. It is also good to mention at this point that we considered the meaning of the word to vary both according to the intensity of the emotion and according to its target being human or non-human.

To begin with, the following definitions for the verb *vihata*, which we also used for the noun *viha*, had already been written by Ulla Vanhatalo and Cliff Goddard (each definition will be accompanied by an example; all examples were translated by Mari Siirainen):

First definition of the verb <i>vihata</i>:
someone X <i>vihaa</i>(1) someone Y
<i>someone X thinks like this about someone Y for some time:</i>
<i>this someone Y is someone very bad</i>
<i>I want something bad to happen to this someone</i>
<i>I can't not do something / I want to do something</i>
<i>because of this, this someone X feels something very bad towards this someone Y</i>
<i>many people think about other people like this</i>
<i>many people think it is very bad if someone thinks like this about someone</i>

(1) *Näi-den asio-i-den peittelijö-i-tä kohtaan tunne-n viha-a.*

these-GEN thing-PL-GEN coverer-PL-PAR towards feel-1SG hatred-PAR

'I feel *hatred* towards people who cover up these things.'

Second definition of the verb <i>vihata</i>:
someone X <i>vihaa</i>(2) something Z
<i>someone X thinks like this about something Z for some time:</i>
<i>something Z is something very bad of this kind</i>
<i>I don't want to do anything with this something Z</i>
<i>at the same time, I know that I can't not do something with this something Z</i>
<i>because of this, this someone X feels something very bad towards this something Z</i>
<i>many people can think about many things like this</i>
<i>many people think it is not bad if someone thinks like this</i>

(2) *Ei, taistolainen viha-a kaikke-a läntis-tä.*

no communist hate-3SG everything-PAR western-PAR

'No, a communist hates everything that represents the West.'

Third definition of the verb <i>vihata</i>:
someone X <i>vihaa</i>(3) someone Y / something Z
<i>someone X feels very bad</i>
<i>this someone X thinks like this</i>
<i>I feel very bad because of someone Y / something Z</i>
<i>because of this,</i>
<i>this someone X thinks something very bad about this someone Y / something Z</i>
<i>this someone X can say something very bad about this someone Y / something Z</i>
<i>many people think like this:</i>
<i>it is bad if someone thinks like this</i>
<i>you cannot think bad about someone if you don't know you feel bad because this someone did something</i>

(3) *mutta Ben ei ole suosittu ja pidetty joten ei ole syytä*

but Ben not+3SG be popular and liked so not+3SG be reason -INF1

kadehti-a ja vihat-a vaikka on-kin hyvän-näköinen

envy--INF1 and hate-INF1 even be+3SG-CLT good-looking

'But Ben is not popular and beloved so there is no reason to envy and *hate* him, although he is good-looking.'

We wrote a fourth definition for the verb alone. It suggests that sometimes a person can hate something rather lightly and that it is not considered a bad thing:

Fourth definition of the verb <i>vihata</i>:
someone X <i>vihaa</i>(4) someone Y / something Z
<i>someone X thinks like this about someone Y / something Z</i>
<i>I feel bad because of someone Y / something Z</i>
<i>because of this,</i>
<i>this someone X thinks / says something bad about this someone Y / something Z</i>

<i>many people think like this:</i>
<i>you can sometimes say this, it is not bad</i>

(4) *Tais-i-t vihat-a myös koulu-ssa*
 might-PST-2SG hate-INF1 also school-INE
äidin-kiele-n-tunte-j-a?
 mother-tongue-GEN -lesson-PL-PAR
 'I guess you also *hated* Finnish lessons at school?'

The difference between our first two initial definitions of the adjective was that a person is angry either with another person or at a thing. The third definition suggested the possibility of being angry with someone without an objective cause, simply because that person unintentionally irritates the experiencer of anger. The definitions were the following:

First definition of the adjective <i>vihainen</i>:
someone X is <i>vihainen</i>(1) at/with someone Y
<i>someone X thinks like this about someone Y at this time</i>
<i>this someone Y did something at some time before</i>
<i>this someone Y could know at this time that something bad can happen because of this</i>
<i>this is bad</i>
<i>I feel something bad now because of this</i>
<i>because of this, this someone feels bad towards someone Y at this time</i>
<i>many people can think like this at many times about many people</i>

(5) *Älä ole vihainen.*
 no+IMP be angry
 'Don't be *angry*.'

Second definition of the adjective <i>vihainen</i>:
someone X is <i>vihainen</i>(2) at/with something Z
<i>someone X thinks like this about something Z at this time</i>
<i>something Z is bad now</i>
<i>this is bad</i>
<i>I feel something bad because of this</i>
<i>I can't do many things</i>
<i>because of this, this someone feels bad towards something Z at this time</i>
<i>many people can think like this at many times about many things</i>

Third definition of the adjective <i>vihainen</i>:
someone X is <i>vihainen</i>(3) at/with someone Y
<i>someone X thinks like this now</i>
<i>I feel bad because of someone Y</i>
<i>I know that this someone Y did not do anything bad</i>
<i>because of this, this someone feels bad towards someone Y at this time</i>
<i>many people think that it is bad if someone thinks like this</i>

In brief, we acknowledged that we did not agree in our analysis of the data, although we did agree that most of the instances of the verb corresponded to our basic definition of *vihata*. Two of us also seemed to agree about which definition was best for the noun. However, we also created many new definitions for the words, containing new features. For example, one of us wanted to distinguish between non-religious and religious anger in the case of the noun and between angry people and angry animals in the case of the adjective. Another one of us wanted to distinguish between anger or hatred directed at single persons as opposed to groups of people, such as those professing certain religions or sexual orientations. The analyst who created seven new definitions for the adjective later summarized the adjective in three short definitions, suggesting that a

person can be *vihainen* ('angry') (1) in general, (2) at a person, and (3) about a thing. In the first case, the focus is on the fact that a person is unhappy and wants to say something negative or even shout.

Table 1 shows our analysis of the noun *viha*. Although the plan was to analyze 300 instances of the word, in fact we did not each analyze exactly the same number of examples. Analysts A and C analyzed 327 examples, but then realized that some of them actually represented some other word or occurred several times ("a mistake"). The table shows that two of us, A and B, thought that definition number three corresponded to the meaning of the noun in approximately two-thirds of the cases. However, analyst C favoured definition number one. She also used additional definitions of her own in 35% of the cases. Analyst A added her own definitions in 16% of the cases, while analyst B was almost satisfied with the existing definitions. However, A considered about one-fifth of the instances unclear and did not categorize them at all. If we consider the analysis of the noun in terms of a chi square analysis, it suggests that it is extremely unlikely that the differences among the three analysts are random ($P = 4.4E-100$).⁴ In other words, each of us seemed to analyze the data on the noun in an idiosyncratic way.

Table 1. The analysis of the noun *viha*

Analyst (number of instances analyzed)	Definition 1	Definition 2	Definition 3	Additional Definition	Unclear	Mistake
A (327)	9 %	4 %	62 %	16 %	9 %	0 %
B (301)	26 %	4 %	67 %	1 %	2 %	1 %
C (327)	61 %	1 %	1 %	35 %	0 %	2 %

Table 2 presents our analysis of the verb *vihata*. It shows our agreement that more than half the instances matched definition number one. However, we disagreed about the remaining definitions. A categorized almost all the data under definition one or two

and considered the rest of the data as unclear. B and C disagreed about how best to categorize the data that did not fall under definition number one. Analyst C considered it best to create additional definitions, which in her view applied to one-fifth of the data. Analysts A and B, however, did not see the need to create additional definitions. A chi square test comparing these analyses again suggests that it is extremely unlikely that these differences among the three analysts are random ($P = 2.35E-55$).

Table 2. The analysis of the verb *vihata*

Analyst (number of instances analyzed)	Definition 1	Definition 2	Definition 3	Definition 4	Additional definition	Unclear
A (308)	72 %	26 %	0 %	0 %	0 %	1 %
B (308)	51 %	17 %	28 %	3 %	0 %	1 %
C (308)	64 %	7 %	6 %	2 %	19 %	1 %

Table 3 shows that the analysis of the adjective *vihainen* proved to be the most difficult. One of us found it impossible to match the definitions with the data. Another created categories of her own, while a third thought that definition one applied to most of the examples. Given the lack of congruence in all of these areas, the task of creating better definitions together in order to streamline the analysis seemed overwhelming and accounts for why we decided to continue in a different way.

Table 3. The analysis of the adjective *vihainen* (which also included the form *vihanen*)

Analyst (number of instances analyzed)	Definition 1	Definition 2	Definition 3	Additional definition	Unclear	Mistake
A (7)	1 %	1 %	1 %	0 %	98 %	0 %
B (243)	8 %	7 %	7 %	78 %	0 %	0 %
C (298)	62 %	9 %	2 %	26 %	0 %	1 %

However, one more thing should be pointed out here. We also noticed that in two cases, the person who had collected the data on a particular word decided to include many additional definitions. B, who collected the data on the adjective, created seven additional definitions, and C, who collected the data on the noun, created eleven additional categories, which she thought would apply both to the noun and the verb. A, who collected the data on the verb, also had many comments pertaining to the verb and the noun. To summarize this section, in the first round we categorized the data according to the definitions that we had created in advance, but this did not work very well, because we ended up adding many definitions and disagreeing about which definition applied to which occurrence of a word in the data.

3.2 The second round

In the second round, the starting point was completely different. The analysis was based on a list of features created on the basis of our discussion in the first round. The term *feature* here refers to approximately one line in a potential definition, for example, "the subject thinks like this: I feel bad". The subject here is the experiencer of the emotion. The word *subject* is not a semantic prime, but rather should be seen as a so-called molecule, which could be defined separately for the purpose of this analysis (Goddard 2011: 194-195).

The list we used in the second round consisted of around thirty features, depending slightly on which word was in question, and each of us focused only on the first one hundred random examples of one of the words. We also used a scale from 1 (a very reliable criterion) to 4 (a very unreliable criterion) to evaluate how challenging it was to use the feature in the analysis. The result was that each word received a profile of its own, consisting of features in the order of their frequency and a reliability assessment. The list of features we used and the profiles can be found in the appendices. This section will supply comments on the analysis of each word. It will contain the definitions we created as a result of the feature analysis.

The features in the list in Appendix 1 were created using the NSM language as presented on the NSM homepage, adding the molecules *subject* and *object*. Molecules are usually marked with the subscript *[m]* but, in order to keep the features easier to read, we did not use the subscript. We also used the word *but*, even though it is not a semantic prime. Further information explaining the features was added in parentheses. For example, features which were used for only one or two words are followed by the word class(es). In addition, the analyst who dealt with the adjective marked every metonymy in her data. We did not manage to define metonymy in terms of NSM.

Appendix 2 contains three graphs showing how often each of the features occurred in our final analyses. Here, we will discuss the main findings. The numbers in brackets after each feature in the definitions show how often that feature occurred in the data, in other words, how many times the feature occurred in a set of one hundred examples. Boldface suggests that the analyst was uncertain about the applicability of the feature. We used a scale of 1 to 4, where 1 marked the most reliable criterion. The feature is italicized if the analyst chose the number 3 or 4 for reliability.

To begin with the noun, the analyst recommended three definitions. The first definition suggests that someone feels hatred towards a group of people ("the same kinds of people"), that other people notice and do not approve of this attitude and that the commentator is one of the other people:

First revised definition of the noun <i>viha</i>:
<i>the subject is people (91)</i>
<i>the subject thinks like this: I feel bad (80)</i>
<i>the subject is someone other than the one who says the word (65)</i>
<i>many people think they know why the subject thinks like this (19)</i>

<i>there is an object (70)</i>
<i>the object is a part of the same kinds of people (34)</i>
<i>many people think like this: the subject thinks something bad about the object (34)</i>
<i>many people think like this: it is bad if someone thinks like the subject thinks (73)</i>
<i>the subject says something bad about the object (23)</i>
<i>the subject does or can do something bad (17)</i>
<i>the subject does this for a long time (32)</i>

The following is an example of this kind of hate:

(6) *Samaa vihaa sekä juutalaisviha,*

same *hatred*-PAR also *jew-hatred*

homoviha ja islamistiviha,

gay-hatred and *islamist-hatred*

ensin kiihoittamista noita ryhmiä vastaan joko taloussyillä tai vääräuskoisuussyillä tai muilla tekaistuilla syillä ja sitten vaan toimeksi tilanteen muuttamiseksi jos hallinto tai suuri äänekäs os [sic] ihmisistä niin vaatii.

Hatred of Jews, gays and Muslims is the same; first someone incites other people to act against those groups for economic or religious or other fictitious reasons, and then if the government or a loud majority of people so requires, it is time to act to change the situation.

The second definition suggests a similar kind of hatred, but this time towards an individual person or persons who do not form an ethnic, religious or comparable group:

Second revised definition of the noun <i>viha</i>:
<i>the subject is people (91)</i>
<i>the subject thinks like this: I feel bad (80)</i>
<i>the subject is someone other than the one who says the word (65)</i>
<i>many people think they know why the subject thinks like this (19)</i>
<i>there is an object (70)</i>
<i>the object is someone or some people (25)</i>
<i>many people think like this: the subject thinks something bad about the object (34)</i>
<i>many people think like this: it is bad if someone thinks like the subject thinks (73)</i>
<i>the subject says something bad about the object (23)</i>
<i>the subject does or can do something bad (17)</i>
<i>the subject does this for a long time (32)</i>

Example (7) shows this kind of hatred:

(7) *Mitäs sitä suotta vihaasi*

what PRT in+vain *hatred*-PAR-2SGPX

kasvatat Jasminia kohtaa [sic].

grow-2SG Jasmin-PAR against

Why do you unnecessarily cause your hate for Jasmin to grow?

The third definition could even consist of one feature: the word is the subject (26). It would suffice to distinguish it from other kinds of hate. However, it is clear that other features are also involved, although which features is less clear. An example is the following:

(8) *Tuo viha perustuu täysin*
 that *hatred* is+based-3SG entirely
valheeseen ja juoruihin, joita
 lie-ILL and gossip-PL-ILL which
kukaan ei viitsi tarkistaa, miten pitävät
 no+one not bother check how hold
paikkansa.

place

Such hate is entirely based on lies and gossip, and no-one bothers to check if such things are true.

The analyst who worked with the verb *vihata* recommended two definitions for it. Here is the first one, which probably gives the main or prototypical sense:

First revised definition of the verb <i>vihata</i> :
vihata₁
<i>there is someone X (98) who thinks something bad (76) about someone Y or something else (90) for all time (89)</i>
<i>many people think like this</i>
<i>X feels bad (81)</i>
<i>I know why X feels bad (27)</i>
<i>it is bad if someone thinks like X thinks (78)</i>
<i>X doesn't want to be near Y (40)</i>
<i>it is not X who says the word "vihata" (80)</i>

Example (9) shows a case where the object of hate is not a person:

(9) *Pelaaja-t vihaa-vat* ruotsi-a, koska hei-lle
 player-PL hate-3PL swedish-PAR because they-ALL

kiele-stä ei ole hyöty-ä.

language-ELA not be use-PAR

The players hate Swedish, because that language is of no use to them.

In example (10), the verb is used for an emotion occurring between people:

(10) *Luulet ihmisten vihaa-va-n sinua mutta se ei*

think-2SG person-PL+GEN hate-PCP-GEN you-PAR but it not

pidä paikka-a-nsa vaan on sinun oma-a mielikuvitus-ta-si

hold place-PAR-3PX but be+PRS+3SG you-GEN own-PAR imagination-PAR-2SGPX

kuten tarina-si.

like story-2SGPX

You think that people hate you, but it is not true. Rather, you imagine it like you imagine your story.

The second sense of *vihata* in the current data is surprisingly frequent as well, because the hatred seems to be directed towards a group of people in almost half the cases. The definition is as follows:

Second revised definition of the verb <i>vihata</i>:
vihata₂
<i>there is someone X (98) who thinks something bad (76) about someone Y for all time (89)</i>
<i>Y is a part of the same kind of people (48)</i>
<i>many people think</i>
<i>X feels bad (81)</i>
<i>I know why X feels bad (27)</i>
<i>it is bad if someone thinks like X thinks (78)</i>

<i>X doesn't want to be near Y (40)</i>
<i>it is not X who says the word "vihata" (80)</i>

The writers of examples (11) and (12) used the verb *vihata*₂ in this sense:

(11) *Joo ja muslimi rasisti on täydellinen*

yes and Muslim racist be+3SG perfect

*vaikka hän kuinka **viha**isi meitä*

even (s)he how *hate*-COND+3SG us

vääräuskoisia.

unbelievers

Yes, and a Muslim racist is perfect, regardless of how much s/he would hate us unbelievers.

(12) *Ensin **viha**a homoja ja*

First *hate*-3SG gay-PL-PAR and

sittten [sic] pariin otteeseen rinnastaa

then 'a couple of times' compare-3SG

ne ja niiden puolustajat

them and they-GEN defender-s

naisiin.

woman-PL-ILL

First, he hates gays and then he compares them and their defenders to women a couple of times.

This round also produced a definition of the main or prototypical sense of the adjective *vihainen*:

Revised definition of the adjective <i>vihainen</i>:
<i>vihainen</i>
<i>there is someone X who is feeling bad (73)</i>
<i>it is not X who says the word "vihainen" (55)</i>
<i>there is a reason for X's feeling bad (34)</i>
<i>many people think it is bad if someone thinks like X thinks (23)</i>

The adjective *vihainen* occurs in this sense in example (13):

(13) *Suomessa ei toivottavasti päästetä*

Finland-INE not hopefully let-PASS

ikinä vihaisia maahanmuuttokriitikoita

ever angry-PL-PAR immigration-critics

päättämään nuorten

decide-INF young-PL+GEN

tulevaisuudesta.

future-ELA

Hopefully, nobody will ever let angry immigration critics decide the future of young people in Finland.

There are also examples in the data, which attest to less serious anger or attest to the kind of hate that seems to be accepted by the writer, as shown by examples (14) and (15):

(14) *Äiti on vähän vihainen*

mother be+3SG little angry

kun on niin paljon tavaraa kadoksissa.

when be+3SG so many things missing

Mother is a little angry because so many things are missing.

(15) *Kansa on todella **vihainen** näi-lle päättäj-i-lle*

people be+3SG really *angry* these-ALL decider-PL-ALL

ja varsinkin niille taho-i-lle ja henkilö-i-lle jotka

and especially those-PL-ALL party-PL-ALL and person-PL-ALL that

eniten o-vat syyllis-i-ä tähän hulluute-en.

most be-3PL guilty-PL-PAR this-ILL madness-ILL

The people are really angry with these decision-makers and particularly with those parties and persons who are most guilty of this madness.

3.3 Summary

To sum up the first round, we did not agree on how to analyze the adjective *vihainen*. We agreed the most on the definition of the verb *vihata*. The first definition was favoured in all three analyses, covering a minimum of half the data. Two of us also agreed that the third definition covered a major part, around two-thirds, of the occurrences of the noun *viha*. (See section 3.1. for the definitions.)

There seem to be three main differences between these two definitions. Firstly, some features, which characterize the verb, do not seem to characterize the noun. They are as follows: the subject thinks that the object of hate is very bad, and the subject wants that something bad will happen to the object, but cannot do anything even though s/he wants to. Secondly, the hate expressed by the noun could be described in less concrete terms. The subject simply thinks something bad about the object and may therefore say something very bad about the object. Furthermore, in the case of the noun, the object is not necessarily a human being.

Interestingly, it is possible to consider our agreement even in the second round. We all agreed that some features characterized each of the words. Those were in fact the features that sum up the main meaning of the adjective: someone is feeling bad and there is a reason for it; however, it is not that someone himself or herself who reports the feeling, and, in many people's opinion, that particular someone thinks in the wrong

way about the object. In other words, the feeling that is reported is evaluated negatively; it is the wrong feeling.

Two of us also agreed on one point as regards the reliability of analyzing the features in the final definitions. The agreement concerned the feature that suggests that the person who feels *viha* or is the subject of the verb *vihata* feels bad. It seemed to us that feeling bad is part of feeling *viha*. However, at the same time we realized that the contexts gave us few clues as to whether that was actually the case. This was especially so because it was usually not the angry people themselves who reported *viha*.

To follow this up, it should be mentioned that it was difficult to decide whose point of view the analysis should reflect: Should we try to evaluate what someone is feeling or should we instead rely on the reporter's judgement? Can we do that without adding our subjective interpretation? How much do all of these rely on general opinion? Should we try to assume a general point of view? We attempted to solve these problems by using formulations such as "the subject thinks like this" and "many people think like this", but this discussion should be continued.

That the definitions presented above were not formulated exactly in terms of our final list of features in Appendix 1 reflects the fact that the discussions concerning both the perspective and the formulation of the features and definitions continued to the very end of our project. We decided that everything need not be fixed at this point.

4. Discussion

Many issues concerning the process and its outcome could be discussed here. We decided to focus on four things: what the process tells us about inter-subjective semantic analyses, what it tells us about the coupling of the NSM method with the corpus method, what it tells us about the use of the words in question, and how it relates to issues that concern a broader audience. The words *broader audience* refer not only to semanticists who use different methods and other linguists, but also to non-linguists.

4.1 The inter-subjective process

There were two things in particular that came as surprises regarding the inter-subjective process. The first was that 900 examples were too many for the kind of two-stage process that was initially planned to measure inter-rater agreement. The other was that we thought differently not only about the data, but also about the process. In other words, it was not only inter-rater agreement that was the issue, but also how best to conduct the analysis. However, it was the solution to this dilemma that eventually led us to see the data in a new way. Consequently, the inter-subjective process can be regarded as rather fruitful, not in spite of our differences as analysts, but exactly because of them. It was good that we had to explain and at times even question our analyses, because it led to a learning process for all of us.

The number of examples was too high for two reasons. Firstly, it took us much longer to conduct the analysis than we had planned. In fact, the entire analysis of 900 instances was never performed by all of us. This showed, above all, that each of us had a different approach to semantic analysis, which was in fact the second issue. One of us thought that it was normal to analyze such a number of instances in corpus linguistics, while the two others would have liked to restrict the set of data and pay more attention to detail. It was exactly such detail, which then proved to be impossible to discuss in a limited number of hours when we met to talk about the first round of analysis.

One way to go forward in the second round would have been to pay more attention to grammar, but we chose to focus on the features included in the definitions. It was much easier to discuss the second analyses face-to-face, because the data set was so limited. We could in fact print out an analysis of one hundred examples, take a look at it and discuss it. This showed the whole in a completely new light. We can therefore recommend that anyone attempting to reach inter-rater agreement in an NSM-based analysis should begin with a relatively small set of data.

4.2 Coupling the corpus method with the NSM method

The main finding was that our view of optimal NSM-based definitions would be likely to change if everyone based their analyses on authentic data. Traditionally, NSM researchers have based their definitions of words for emotions on so-called templates (Goddard 2011: 105-107). Although such templates also formed the basis for our preliminary definitions, we moved away from the templates in the second round when considering which features actually occurred in the data. A middle way would be not to abandon the idea of templates, but to improve previous templates with the help of authentic data, or to develop new ones. That would allow us easier comparisons between different words and languages.

There are at least two advantages of continuing work on how to base an NSM definition of a word on authentic data, such as, for example, corpus data. One is that semanticists will be less likely to pay attention only to things that have been noticed before, which always involves the risk of missing something important. We ended up discussing questions we had not read about in previous research, such as the length of context required to identify a particular feature in the definition of a word and the grammatical variation in the sentences attesting the words. On the other hand, we also noticed that NSM definitions of emotions are likely to include features that are not based on how people actually use the words for those emotions. Another advantage is that semanticists will be obliged to explain in more detail what kinds of data they used and why. This will add to the replicability of the research and also to reliability, because their peers will then have the chance to check whether they agree with the analysis.

However, we also encountered issues in the corpus analysis, which we have not yet resolved. Firstly, a short corpus context did not tell us as much as we expected. Either we would have needed a larger context or people did not tend to verbalize all the features that we were interested in, for example, what angry people do when they use the *viha* words. We would have liked to know more about the features "the subject does something", "the subject does or can do something bad" and "the subject does

something very bad", but it was usually impossible to say whether the subject did something or not, let alone whether that something was bad or very bad. At the same time, the sentences included many characteristics that we were not able to capture in our analyses.

Moreover, we realized in our oral conversation with Mietta Lennes⁵, a phonetician accustomed to working with such features, that, while our list of features could be used as a basis for further studies, it could also be developed further. Above all, it was not an optimal list for statistical analyses. For example, while the applicability of features was designed to be answered in terms of "yes-no" questions, their formulation could have been more logical: the features were not exactly the same for all the words, and they overlapped to some extent. We had also not considered the possibility that the answer to whether a feature would apply to an example might not be "yes" or "no" but rather "not relevant". Furthermore, we had not considered the notion that some features were likely to be dependent on each other. In other words, the features probably form groups and hierarchies. All these matters could be taken into account in a future project. Such a project could also develop the valuable idea that some features (or semantic criteria) can be evaluated in a more reliable manner than others.

4.3 The use of the words

Above all, there were two main findings concerning the use of the studied words that we did not know at the start. One was that, when Finnish people use the *viha* words online, they usually are not referring to their own emotions. Instead, they are interpreting other people's behaviour. The other was another main difference between Wierzbicka's (1992: 569) definition of the English *anger* and our definitions of *viha*, namely that Finns tend to have a negative attitude towards someone manifesting *viha*. Usually, this had to do with the fact that people regard someone as hating people whom they should not hate.

While it could be assumed that the adjective *vihainen* 'angry' is closer to the English

concept of *anger* than the verb and noun *viha(ta)* 'hate', the negative attitude towards anger or hate seemed to characterise even the use of the adjective. Wierzbicka's definitions of the English *angry with* and *angry at* (1999: 88-89) do not include any such feature.

At this point, we need to acknowledge Tuovila's (2005: 100) observation that the Finnish *viha* tends to last for a long time. Although this feature was not included in our preliminary definitions, it ended up in our definitions of the noun and verb *viha(ta)* in the second round. It is nevertheless not unique to Finns. Kornacki (2001: 269) uses it to define the Chinese concept of *sheng/qi*. It would be interesting to investigate other languages in which this meaning occurs.

It is likely that the length of anger rather than its quality distinguishes the adjective *vihainen* from the two other words: someone who is *vihainen* is assumed to experience something similar to someone who feels *viha* or expresses *vihata*, but this feeling or expression will not last for a long time. This could be considered a third important finding. Our data were also somewhat more likely to suggest a reason for a person's being *vihainen* than for them to experience *viha* or show *vihata* (the numbers in the second round were 34 as opposed to 19 and 27 respectively).

A further difference between Wierzbicka's (1992: 569) definition of the English *anger* and our definitions concerning the noun and verb *viha(ta)* can also be noted. It was that in our definitions, *viha* tended to be directed at representatives of a group at least as often as at individuals.

If we compare our definitions of *viha* with Durst's (2001) definitions of the German words *Ärger*, *Wut* and *Zorn*, we find that the same features of referring to other people's emotions, criticizing their anger or hate and hating representatives of a group are also missing. The same applies to Kornacki's (2001) definitions of the Chinese words for anger.

The question is whether the differences between the above-mentioned languages have to do with the languages themselves, the data analyzed or the methods used. In other words, it is possible that people have not paid attention to such features because they are missing in the templates used.

It could also be assumed that since anger and hate are negative emotions, people will always have a negative attitude towards them. Such an assumption is nevertheless contradicted by Kornacki's (2001: 277) data on the Chinese anger word *fen*, because his definition suggests that it can sometimes be good for a person to feel it. Even our own data include examples in which the emotion is not evaluated negatively.

Interestingly, Bardzokas (2004: 8, 12) includes the feature "people could see X felt like this" in his definitions of the English adjectives *irate* and *mad*. His definition of *mad* also includes the feature "people could see X did something bad because of this" (ibid. 12). He also includes the feature "people could see X felt like this" in his definitions of the Greek verbs *nevriase* 'to get angry' and *eknevristike* 'to be angered' (ibid., 20-21). It is therefore possible that his knowledge of the Greek language has influenced his understanding of the English adjectives. It is also possible that there are similarities in meaning and usage between these English and Greek words and the *viha* words investigated in this article, since we came to the conclusion that other people's judgements play an important role in identifying and evaluating *viha*. However, while Bardzokas (ibid., 8) emphasizes that people can see anger when it leads to a "visible vigorous reaction", it was difficult for us to identify such reactions in our data.

4.4 Message to a broader audience

While the findings so far mainly have to do with semantic analysis and definitions of words, they also have broader relevance. To begin with, a Google search for the words *viha(ta)* and *vihainen* only gives us indirect information about what people feel. It tells us more about what people think about anger. People tend to use these words to report what they think other people feel, and they tend to evaluate such emotions negatively.

In other words, if we find a great number of these words online, it does not specifically tell us that many people are angry or hate someone or something. Rather it is likely to suggest that many people have interpreted someone else's behaviour as angry or interpreted someone else as hating other people or things. To declare that one is feeling angry or that one hates someone or something may even be something that Finnish people tend not to do.

It is interesting to consider the idea that *viha* is a cultural keyword in light of the suggestion that talking about one's own anger or hate is, at least to some extent, something one does not do in Finnish society. The question then becomes whether *viha* can be considered as a cultural keyword, even if people do not want to say that they feel it. It is possible if we consider the likelihood that they nevertheless notice other people experiencing and manifesting *viha*. It should also be taken into account that Tuovila's (2005: 17) subjects did not report their own emotions, but rather listed words for emotions. In such a situation, it was less likely that they felt inhibited to mention *viha*.

However, at least two things should be taken into account. Firstly, Finns can express their anger very effectively without saying that they feel it. Secondly, Finns can be made to talk about their *viha*, as suggested by a piece in the newspaper *Helsingin Sanomat*, on June, 17 2017. It reported that a theatre group was successfully interviewing people about whom or what they hated, for example, themselves, the government, poverty and being alone (Dahlblom 2017). An important question is whether it is more acceptable in Finnish society to say that one hates a public person or a group of people than to say that one hates a person one normally interacts with apart from one's self.

It is also noteworthy that, although the target of anger or hate was often some group of people such as representatives of another religion, people in our data were relatively unlikely to report a clear cause for the emotion. While the contexts, which we read

remained short, this may mean that people consider it sufficient to mention the target of the emotion, either because everyone is supposed to know why such anger or hate occurs or that people consider it unnecessary to specify the reason for anger and hate in general. Should that be correct, it is an interesting finding and one that is relevant to discussing the phenomenon of anger and hate in society.

Further questions also emerge. These include the following: To what extent can we actually trust people to be able or willing to report their own emotions? Are we in fact equally good at reporting other people's emotions? People often seem to assume that people themselves are the best reporters of their own emotions and feelings. However, if it is usually other people who report at least a part of the emotions, we need to take this into account when we investigate the emotions people tell us that they are feeling, because in that case it is likely that they prefer not to talk about certain emotions. To take this to an extreme, it may even be the case that they do not recognize some emotions in themselves, but that such emotions are easier for other people to see.

Moreover, we may ask what the relationship between words and deeds actually is. In our data, people were unlikely to say what kinds of deeds, if any, the emotion *viha* led to, although this seems to be a central question, for example, when we consider the risks of hate speech. Again, it is possible that people do not mention all the relevant deeds because we are supposed to know how *viha* affects people. However, it is also quite possible that, although the language of *viha* seems to be relatively far from a serious crime in our data, its accumulation always involves the risk of violence.

To mention a rather different issue, if we are able to define emotion words in a good way in terms of the NSM, such definitions, or even sets of features, could be used, for example, in questionnaires used by sociologists or psychologists. It is important to note that there is no complete overlap between words for emotions in different languages. Instead, some languages have words for emotions that are not even recognized by speakers of other languages. These are important considerations when questionnaires

are translated from one language to another. In addition, because NSM definitions consist of rather basic words, they should be easy for various kinds of people to understand.

5. Conclusion

To conclude, a combination of the NSM method with the corpus method proved to be fruitful in our project. The findings not only concern the issue of how best to define the words *viha*, *vihata*, and *vihainen*, but also concern the development of the NSM method and semantic methods more generally, as well as even broader issues, such as what a potential accumulation of *viha* words online is likely to mean: it is indirect rather than direct evidence of what people feel, at least if we consider that people themselves are the most reliable sources of what they actually feel.

According to our final definitions so far, all three of the *viha* words share a conceptual core, which consists of the following notions: someone is feeling bad and there is a reason for it; however, it is not that someone himself or herself who reports the feeling, and, in many people's opinion, that particular someone thinks in the wrong way about the object. At the same time, we need to note that the reason is often rather vague or is not mentioned. The main difference between the adjective *vihainen* and the other two words seems to be that the emotion, which it expresses does not tend to last long. The emotion expressed by the adjective also seems somewhat more abstract or elusive than the emotion expressed by the other two words. To be more precise, there seems to be a continuum from the most concrete meaning of the verb to the less concrete meaning of the noun and the most elusive meaning of the adjective. This finding appears to agree with the characteristics of these word classes in general and could be studied further from that perspective⁶.

The original methodological focus on measuring agreement among three linguists shifted to how corpus data could best be used to create NSM-based definitions. It is unlikely that any of us would have thought about such a final solution on their own.

When we started from the definitions, which we had created before analyzing the data, we realized that the definitions did not seem completely accurate. The definitions we created after reading and analyzing the data included completely new features, such as the idea that people report what they think others feel. It is likely that, if future NSM-based definitions are based more and more on clearly defined authentic data, they will change both in form and content. It is likely that the templates will also change as a result. In some cases, people may even want to work without a predefined template.

One way to do this would be to use a list of features, as we eventually did. Although we noticed deficiencies in our list after we had completed the second round of analysis, the list was a useful starting point and one that could be developed further. A natural continuation would be to develop the list of features so that it would facilitate more advanced statistical analyses. It is also important to realize that some features are easier to identify in the data than others and that this can be taken into account in the analysis. Discussions concerning whose perspective the analysis represents and how the definitions should be formulated should also be continued. Lastly, it would be good to collect data representing various text types to ensure coverage of as many contexts as possible.

Abbreviations and notes

¹ NSM – Natural Semantic Metalanguage. Available at: <https://intranet.secure.griffith.edu.au/schools-departments/natural-semantic-metalanguage>

² The Suomi 24 Corpus. Available at: <http://urn.fi/urn:nbn:fi:lb-201412171>

³ We thank Imre Bartis and Jyrki Niemi for advice concerning the use of the *Suomi 24 Sentences Corpus*.

⁴ The categories *unclear* and *mistake* were combined in this analysis, so that no zeros would occur. All those instances had something in common; the analyst thought that they were somehow "out of place".

⁵ We thank her cordially for her expert advice.

⁶ We thank an anonymous reviewer for this insight.

⁷ This web page is no longer available.

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Appendix 1: List of features used in the second round of analysis

there is a subject (verb)

the subject is people (= human, noun and adjective)

the subject is someone, not like people (noun and verb)

the word is the subject (where *word* refers to the noun)

the subject thinks like this: I feel bad

the subject is someone other than the one who says the word

many people think like this: I know the subject thinks like this because of something

many people think like the subject thinks (suggesting that many people would feel the same emotion in the same situation, noun and verb)

there is an object (where *object* = the cause[r] of the emotion)

the object is someone or some people

the object is the same as the subject

the object is a part of the same kinds of people / things (the idea here being that someone hates a group because of some of its characteristics)

the object is a living thing, not someone

the object is not a living thing

the object does something (noun and adjective)

many people think like this: the object is someone/something very bad

some people think like this: the object is someone/something very bad (verb)

many people think like this: the object has done something bad

many people think like this: the object knew what happened/will happen

many people think like this: the object does not do something good

many people think like this: the subject feels bad because something happened / something did not happen

many people think like this: the subject does not want to do anything with the

object

many people think like this: the subject knows this: I can't not do something with the object (in other words, the subject knows that s/he cannot avoid interacting with the object)

many people think like this: the subject thinks something bad about the object

many people think like this: the subject wants something bad to happen to the object

many people think like this: the subject wants to do something but can't

many people think like this: it is bad if someone thinks like the subject thinks

the subject says something bad about the object (where says includes writes, which is not a semantic prime)

the subject does something

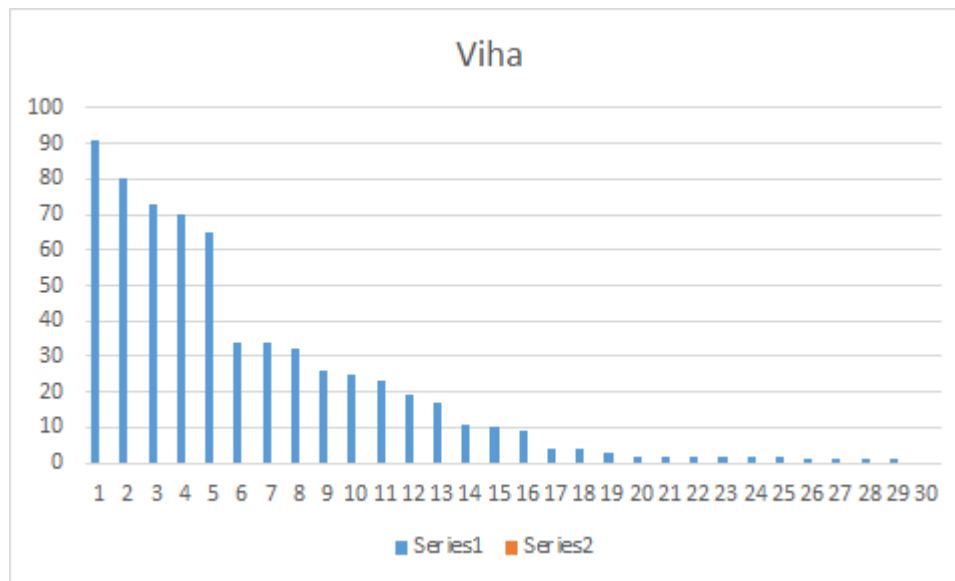
the subject does / can do something bad (this would include things like hitting someone)

the subject does something very bad (this would include hurting someone seriously or killing them; however, we did not precisely define the borderline between *bad* and *very bad*)

the subject does this for a long time

Appendix 2: The word profiles

1. *Viha*



The first fifteen features are (with reliability 3-4, i.e. uncertainty, indicated by italics):

1. the subject is people (= human, noun and adjective)
2. *the subject thinks like this: I feel bad*
3. *many people think like this: it is bad if someone thinks like the subject thinks*
4. there is an object (where *object* = the cause[r] of the emotion)
5. the subject is someone other than the one who says the word
6. the object is a part of the same kinds of people / things (the idea here being that someone hates a group because of some of its characteristics)
7. many people think like this: the subject thinks something bad about the object
8. the subject does this for a long time
9. the word is the subject (where *word* refers to the noun)
10. the object is someone or some people
11. the subject says something bad about the object (where *says* includes *writes*, which

is not a semantic prime)

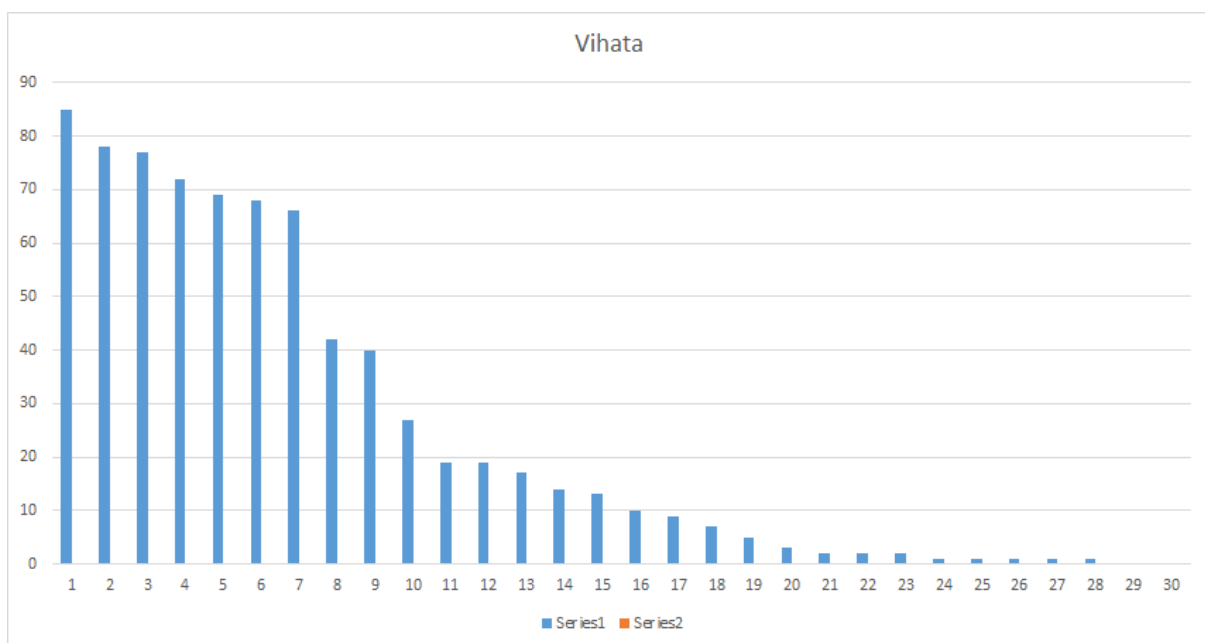
12. many people think like this: I know the subject thinks like this because of something

13. *the subject does / can do something bad (this would include things like hitting someone)*

14. the subject does something

15. many people think like this: the object has done something bad

2. *Vihata*



The first fifteen features are (with reliability 3-4, i.e. uncertainty, indicated by italics):

1. there is a subject (verb)

2. there is an object (where *object* = the cause[r] of the emotion)

3. the subject does this for a long time

4. *many people think like this: the subject thinks something bad about the object*

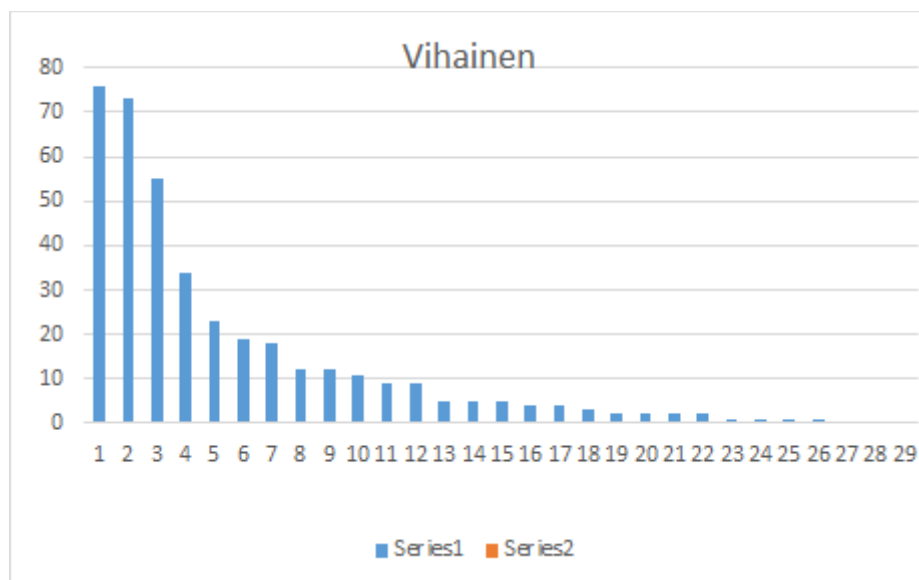
5. the subject is someone other than the one who says the word

6. *the subject thinks like this: I feel bad*

7. many people think like this: it is bad if someone thinks like the subject thinks

8. the object is a part of the same kinds of people / things (the idea here being that someone hates a group because of some of its characteristics)
9. *many people think like this: the subject knows this: I can't not do something with the object (in other words, the subject knows that s/he cannot avoid interacting with the object)*
10. many people think like this: I know the subject thinks like this because of something
11. the object is someone or some people
12. the object is not a living thing
13. *many people think like this: the subject does not want to do anything with the object*
14. some people think like this: the object is someone/something very bad (verb)
15. many people think like the subject thinks (suggesting that many people would feel the same emotion in the same situation, noun and verb)

3. *Vihainen*





The first fifteen features are (with reliability 3-4, i.e. uncertainty, indicated by italics):

1. the subject is people (= human, noun and adjective)

2. the subject thinks like this: I feel bad
3. *the subject is someone other than the one who says the word*
4. many people think like this: I know the subject thinks like this because of something
5. *many people think like this: it is bad if someone thinks like the subject thinks*
6. *the subject does this for a long time*
7. there is an object (where *object* = the cause[r] of the emotion)
8. many people think like this: the subject feels bad because something happened / something did not happen
9. many people think like this: the subject thinks something bad about the object
10. metonymy
11. the object is someone or some people
12. the object does something (noun and adjective)
13. the object is a part of the same kinds of people / things (the idea here being that someone hates a group because of some of its characteristics)
14. *the subject does / can do something bad (this would include things like hitting someone)*
15. *many people think like this: it is bad if someone thinks like the subject thinks*

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Résumé

Natural Semantic Metalanguage (NSM) has proven to be a useful tool for analyzing meanings of abstract words such as those for emotions. NSM researchers often use corpus data to illustrate various meanings of words. However, their use of corpus data has not been very systematic. One could talk about corpus-assisted rather than corpus-based or corpus-driven research: corpora have been used to provide examples rather than to guide the research. This article suggests a way not only to base research on corpus data, but also to let it guide us in defining words in terms of NSM. It presents a new method, which we developed in our attempt to evaluate and improve inter-rater agreement in NSM-based corpus analysis. Our data come from the Suomi24 Sentences Corpus and concern the Finnish emotion words *viha* ('anger, hate'), *vihata* ('to hate') and *vihainen* ('angry'). The article contributes to our understanding of anger and hate and their role in contemporary Finnish by defining these words. We first report how we defined these words without Suomi24 corpus data and evaluated our inter-rater agreement. Then we allowed the data to guide us in our analysis. We list two sets of

definitions, which can be compared with each other and which inspire several questions about the nature of *viha*, as well as anger and hate more generally. Simultaneously, we discuss how NSM-based semantic research could be developed through systematic use of corpus data. We present several ideas as to how to collect and analyze such data. We suggest that corpus-driven definitions will lead to excluding information that tends to be irrelevant in authentic texts and include new types of information. We acknowledge that our observations remain tentative. We suggest where and how the development can start instead of providing the reader with definite answers.

Key words: anger, emotion, the Finnish language, Natural Semantic Metalanguage, semantics.

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